



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,904	08/11/2006	Wayne M. Moreau	FIS920030012US1	7740
32074 7590 02/03/2009 INTERNATIONAL BUSINESS MACHINES CORPORATION DEPT. 18G BLDG. 300-482 2070 ROUTE 52 HOPEWELL JUNCTION, NY 12533			EXAMINER LEE, SIN J	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 02/03/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,904	Applicant(s) MOREAU ET AL.	
	Examiner Sin J. Lee	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6-8,10-15 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6-8,10-15 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Upon reconsideration, previous 103(a) rejection over Fujimori'161 is hereby withdrawn.
2. In view of the newly cited prior art (with respect to present claim 11), the following rejection is made non-final.

Claim Rejections - 35 USC § 102

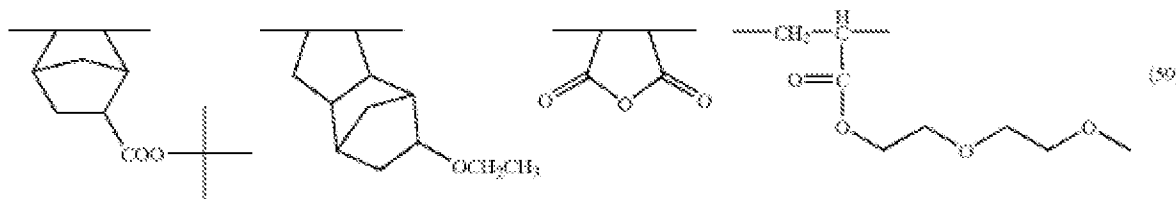
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujimori (US 2003/0186161 A1).

In Example 59, Fujimori teaches (see TABLE 7, [0332]-[0340] and TABLE 4)a positive photoresist composition containing Resin (59) shown below, an acid generator, a solvent, and basic compounds 2, 6 and 7, which are *triphenylimidazole (present room temperature solid base)*, *1,8-diazabicyclo[5.4.0]undec-5-ene (present liquid low vapor pressure base)* and *1,5-diazabicyclo[4.3.0]non-5-ene*, respectively:



Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1).

The Resin (59) shown above contains an acid-decomposable group of t-butyl group. Fujimori also teaches other groups that can be used equally for his resin, such as tetrahydropyranyl group or a tetrahydrofuryl group (see [0143]-[0144]). Since Fujimori teaches the equivalence of those acid-decomposable groups, it would have been obvious to one skilled in the art to replace the acid-decomposable group in Resin (59) with a tetrahydropyranyl group or a tetrahydrofuryl group with a reasonable expectation of success. Thus, Fujimori's teaching renders obvious present invention of claim 7.

7. Claims 8, 10, 12-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1) in view of Koguchi et al (4,814,244).

Fujimori is discussed above. Fujimori applies his positive photoresist composition onto a substrate. The resulting photoresist layer is exposed to light (such as KrF excimer laser beam, ArF excimer laser beam, or electron beam) through a

Art Unit: 1795

desired mask, followed by baking and development to obtain a resist pattern. (see [0306]-[0307]). Fujimori also uses a reflection preventing film between the substrate and the photoresist layer (see [0356]). Fujimori does not explicitly state an etching step after the development or a material layer comprising a chromium-containing composition.

A resist pattern (such as Fujimori's resist pattern) is widely used in the field of semiconductor device, for example, in producing a mask for manufacturing the semiconductor device, as evidenced by Koguchi (see col.1, lines 11-20). Such mask is manufactured by (i) depositing a metal layer such as a chromium layer on a surface of a glass substrate, (ii) coating a resist film on the metal layer, (iii) imagewise exposing the resist film by an electron beam, (iv) developing the resist film to form the resist pattern, and (v) selectively etching the metal layer by using the resist pattern as an etching mask. It would have been obvious to one skilled in the art to use Fujimori's resist pattern in the method of producing a mask for manufacturing the semiconductor device as illustrated by Koguchi because Fujimori also states that his positive photoresist composition is used in the production process of semiconductor devices. Thus, Fujimori in view of Koguchi render obvious present inventions of claims 8, 12-15 and 17.

With respect to present claim 10, Fujimori's Resin (59) shown above contains an acid-decomposable group of t-butyl group. Fujimori also teaches other groups that can be used equally for his resin, such as tetrahydropyranyl group or a tetrahydrofuryl group (see [0143]-[0144]). Since Fujimori teaches the equivalence of those acid-decomposable groups, it would have been obvious to one skilled in the art to replace

Art Unit: 1795

the acid-decomposable group in Resin (59) with a tetrahydropyranyl group or a tetrahydrofuryl group with a reasonable expectation of success. Thus, Fujimori in view of Koguchi renders obvious present invention of claim 10.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1) in view of Koguchi et al (4,814,244) as applied to claim 8 above, and further in view of Okumura et al (4,954,218).

Fujimori in view of Koguchi is discussed above. Even though Fujimori in view of Koguchi does not explicitly mention reactive ion etching for its etching step, it is conventionally known in the art, as evidenced by Okumura, col.1, lines 10-13, that for etching step in the art of semiconductor device, a reactive ion etching is utilized. Thus, it would have been obvious to one skilled in the art to use a conventionally known etching technique such as reactive ion etching for the etching step in Fujimori in view of Koguchi. Thus, Fujimori in view of Koguchi and further in view of Okumura renders obvious present invention of claim 11.

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori (US 2003/0186161 A1) in view of Momma et al (5,731,131).

As discussed above, Fujimori teaches present steps (A)-(D) in forming a resist pattern. Although Fujimori does not explicitly state present depositing step (E), a depositing step such as a chemical vapor deposition is one of the normally required semiconductor device manufacturing device processes, as evidenced by Momma, col.12, lines 22-25. Therefore, it would have been obvious to one skilled in the art to perform a depositing step such as a chemical vapor deposition after Fujimori's

Art Unit: 1795

development step because Fujimori states that his photoresist composition is used in the production process of semiconductor devices and because a depositing step such as a chemical vapor deposition step is one of the normally required semiconductor device manufacturing device processes as evidenced by Momma. Thus, Fujimori in view of Momma render obvious present inventions of claims 18 and 19.

Response to Arguments

10. Applicants argue that Fujimori does not disclose or suggest any specific combinations of base additives, nor does Fujimori give any guidance regarding selection of such combinations. Applicants argue that the comparative examples presented in present specification show that the use of present combination of the room temperature solid base and the liquid low vapor pressure base provides unexpected results of reduced footing. Thus, applicants argue that such results demonstrate that the claimed composition and methods requiring use of such a combination of base additives is not obvious from Fujimori.

In view of the fact that Fujimori's Example 59 anticipates present combination of the room temperature solid base and the liquid low vapor pressure (see Paragraph 4 above), applicants' such argument is now moot. Besides, the comparison shown in present specification is not made to the closest prior art. See MPEP 716.02(e).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

Art Unit: 1795

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sin J. Lee/
Primary Examiner, Art Unit 1795
January 31, 2009